MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

BDS2874 – MANAGEMENT DECISION SCIENCE

(All sections / Groups)

7 OCTOBER 2016
3.00 p.m – 5.00 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **FIVE (5)** printed pages with:
   Section A: Ten (10) multiple choice questions (20%)
   Section B: Three (3) structured questions (80%)

2. Answer **ALL** questions.

3. Answer **Section A** in the multiple-choice answer sheet provided and **Section B** in the answer booklet provided.

SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

There are TEN (10) questions in this section. Answer ALL questions on the multiple choice answer sheet.

1. Shadow prices represent:
   A. The value of one additional unit of a specific resource.
   B. The value of one less unit of a basic variable.
   C. The value of one less unit of a specific resource.
   D. The value of one additional unit of a basic variable.

2. In applying the simplex solution procedure to a maximization problem to determine which variable enters the solution mix,
   A. select the one with the smallest C_j-Z_j
   B. select the one with the largest positive C_j-Z_j.
   C. select the one with the largest C_j.
   D. select the one with the smallest Z_j.

3. The two most common objectives for the assignment model are:
   A. minimization of uncertainty or inexperience.
   B. minimization of total costs or inexperience.
   C. minimization of total costs or total time.
   D. minimization of total costs or uncertainty.

4. Optimistic decision makers tend to
   A. consider the unfavourable nature.
   B. select the bad outcomes.
   C. discount favourable outcomes.
   D. magnify favourable outcomes.

5. What is said to exist when total demand equals total supply in transportation problem?
   A. a balanced problem
   B. an equilibrialized problem
   C. a static problem
   D. a harmonized problem

6. Another name for a decision table is a
   A. payout table.
   B. payoff table.
   C. decision tree.
   D. likelihood decision.

Continued...

7. Mat Asin sells 3,600 electric motors each year and the demand is constant throughout the year. The cost of placing an order is RM 40 while the holding cost is RM 20 per year. There are 360 working days per year and the lead time is 6 days. If Mat Asin orders 200 units each time he places an order, what would his total ordering cost be for the year?
   A. RM40
   B. RM120
   C. RM720
   D. RM1200

8. Which of the following is part of the determination of EOQ?
   A. cost of production labour
   B. cost of stock outs
   C. purchase cost
   D. annual demand

9. EOQ is the optimal order quantities that will _____ total inventory costs.
   A. minimize
   B. maximize
   C. steady
   D. maintain

10. CPM stands for
   A. critical path management.
   B. critical path method.
   C. centralized project management.
   D. centralized project method.

Continued...

SECTION B: STRUCTURED QUESTIONS (80 Marks)

There are THREE questions in this section. Candidates MUST answer ALL THREE questions.

Question 1 (30 Marks)

(a) A manufacturing company is closing its warehouses at locations M, N and P. The company intends to transfer the employees to the factories located at A, B and C. The transportation cost per unit in RM from each warehouse to each factory is shown in the following tables:

Warehouse	Factory			Capacity
	A	B	C	
M	5	8	6	70
N	10	9	11	100
P	7	6	8	30
Demands	50	90	60	

Obtain an **initial feasible** solution using the Northwest Corner Method.
Then apply the Stepping Stone Method to find the least-cost distribution system.

(15 marks)

(b) CK consultant firm has four accountants to be assigned to four different projects. The following table shows how many days it takes each accountant to perform each project. Determine the optimal assignment that will minimize the total days required for completing the project.

Accountant	Project (Days)			
	A	B	C	D
Alif	10	10	9	7
Baba	8	9	8	11
Chan	12	14	10	9
Durin	11	13	9	12

(15 marks)

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Question 2 (25 Marks)

Paezah Studio is planning to produce a television advertisement. The activities, time and their precedence relationships are given in table below:

Activity	Time Estimation (weeks)	Activity Predecessors
A	4	-
B	2	-
C	3	A
D	5	A
E	4	B,D
F	6	B
G	8	C,E
H	7	F

(a) Construct a network diagram for this project.

(8 marks)

(b) Determine the critical path and the expected project completion time. Compute the earliest start time, latest start time, earliest finish time, latest finish time and slack time.

(17 marks)

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Question 3 (25 Marks)

A plant manager is considering buying additional furnishing machines to accommodate increasing demand. The alternatives are to buy four machines, five machines or six machines. The profits realized under each alternative are a function of whether their bid for a recent defense contract is accepted or not. The payoff table below illustrates the profits based on the different scenarios faced by the manager:

Alternative	States of Nature	
	Bid Accepted (RM)	Bid Rejected (RM)
Buy Four Machines	15 000	7 500
Buy Five Machines	35 000	8 400
Buy Six Machines	45 000	9 300
Probability	0.5	0.5

(a) What is the best alternative based on Maximax? **(4 marks)**

(b) What is the manager's decision using Maximin? **(4 marks)**

(c) Determine the best alternative using Equally Likely. **(5 marks)**

(d) Find the best strategy through Criterion of Realism ($\alpha = 0.8$). **(6 marks)**

(e) What is the best decision for the manager using Expected Monetary Value (EMV)? **(6 marks)**

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